

THE · EXTENSION PATHOLOGIST

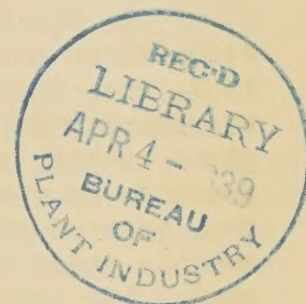
A NEWS LETTER FOR EXTENSION WORKERS INTERESTED IN PLANT DISEASE CONTROL

SERIAL NUMBER 35

January 1939

DISEASE-IDENTIFICATION CONTESTS FOR JUNIORS AS A MEANS OF INSTRUCTION

By
M. F. Barrus
Extension Plant Pathologist
New York



The importance of working with juniors has always impressed me as giving the best returns for energy expended of anything we could do, but it has been difficult for us to undertake such work because of the use of the enterprise-project system of teaching that prevails in New York State. There has seemed to be no place for the inclusion of a plant-disease project in such a scheme.

Most of the high-school teachers of agriculture and the 4-H Club leaders have had little or no training in plant pathology. To develop their interest in the subject, we decided to offer a disease-identification contest along with the judging contests at Cornell Farm and Home Week held during February of each year. Our first contest of this kind was held in 1929. Previously, we had announced this contest to the teachers and had sent them the rules governing it as well as a list of 36 diseases from which 20 would be selected for identification. We also indicated the publications in which the necessary information could be found, and offered the teachers as much assistance in training as possible. Two or more teacher-training conferences have been held each year at the request of the teachers themselves, at which conferences we have had a field trip to collect and identify diseases and have given instruction in the preservation of specimens.

At the time of the contest, which was held in one of our laboratories, the specimens for identification, either fresh or preserved, were exhibited without labels but with a number, by being placed on the laboratory tables. Each school entering the contest was represented by a team of two members. Only one member of a team was allowed in the room at the same time. Form sheets were provided the contestants on which to record the identification. For the first year or two, only the identification and the kind of control measure most effective was required, but in later years the material or chemical used and the time of application have also been included in the requirements. The average grade made by the two contestants constituted the grade of the team. The teams having the highest

and the next highest grade were given prizes consisting of books on plant pathology. The three individuals having the highest scores were presented with medals. The prizes for all contests were awarded at a dinner given during the week, at which dinner all contestants were present. The enthusiasm ran very high on these occasions.

At the first contest held in 1929, there were 23 schools with 46 contestants participating, and the number increased nearly every year until 1937, when there were 75 schools participating. The teams for these schools are usually selected well in advance of the contest, and the contestants are given special instruction by the teachers. The principal objection to this practice is that the contestants learn the control measures by rote, and the real test of skill is in the identification of diseases. Usually a few schools stand high in this contest and win prizes year after year while the others lag behind, many never winning. Making the contest easier will not correct this situation, but something should be done or, otherwise, the weak schools will drop out.

Two years later, the teachers of agriculture of high schools in the fruit districts of western New York requested that we provide a fruit disease-and-insect-pest contest in connection with the annual meetings of the New York State Horticultural Society held at Rochester in January of each year. Such a contest was organized in cooperation with the Department of Entomology. The first of these was held in 1932, and they have been continued each year since. Apple-judging and variety-identification contests conducted by the Department of Pomology are also provided at these meetings. Prizes, consisting of silver cups donated by business concerns of Rochester are awarded the high-scoring teams, and money prizes donated by the Society are awarded contestants having the highest individual scores. There have been from 10 to 14 schools and from 30 to 41 contestants represented at these competitions.

After holding the first Rochester contest, representatives of fruit growers, high-school teachers of agriculture, and 4-H Club leaders from the Hudson Valley fruit districts called on us to provide such contests at Kingston, at the time of the eastern meeting of the New York State Horticultural Society; for Future Farmers' Clubs, 4-H Clubs, and for a group of young people not represented by either who are classified as junior horticulturists. The first contest of this kind was held in January 1933 and has been continued each year since. The number of teams competing has increased gradually until the contestants now number more than 70. There has been a tremendous interest in the contests by these groups, and many youngsters, girls as well as boys, have become so expert in identifying diseases and insect injuries of fruit that it becomes a real problem to obtain enough specimens that are difficult to determine so as to prevent many ties. We have found it necessary to include, as a part of the contest, the identification and tallying of diseases and insect injuries on a random sample of about a half bushel of apples within a definite time limit (6 minutes). Not uncommonly the youngest 4-H Club member will obtain a higher grade than the high-school student.

At these contests, five individuals comprise a team, but the grades of the best three only are used in determining the grade of the team. Although no contestant is permitted to participate in a contest of the same class in succeeding years, there is an opportunity at the Kingston competition for an especially apt boy or girl to participate in three contests at least; the first year in the junior 4-H, the second in senior 4-H, and the third as junior horticulturist or in Future Farmers of America. Plaques and silver cups are donated by business concerns of the locality, and money prizes are awarded individual winners by the Society.

But we are convinced that all these contestants have studied thoroughly only the symptoms of diseases, and have learned their control measures from memory. They have learned nothing of the causal agents and their cycles of development. To induce them to study the pathogenes and insects responsible for the symptoms, we are proposing to include in these contests a series of questions so prepared that they can be answered rapidly. This, we believe, will help to remedy this difficulty. We had considered the possibility of arranging for competitive exhibits of diseases prepared by each team, but such a scheme does not lend itself well to these competitions.

In conclusion, I can say that these contests have clearly demonstrated the capacity of young persons to learn plant diseases, that the contestants become as skillful as, or more skillful than, adults in their identification, and that the subject matter on plant diseases can serve as a basis for as much enthusiasm, as much competition, and as much instruction as any other subject matter.

4-H TEAMS DEMONSTRATE SEED TREATMENT

The South Carolina 4-H seed-treatment demonstration team to make the trip to the National 4-H Club Congress in Chicago, November 5 to December 3, is composed of Wyman Hutto and William Rush of Orangeburg County. These boys gave their demonstration 22 times and before 925 people. In many of their demonstrations they used plants taken from the field to illustrate the educational and economic facts presented. Out of season they used pictures of plants showing the value of seed treatment. The second team gave their demonstration more times but to fewer people.

This team has demonstrated cotton and small-grain treatment in various communities both in and out of the county. It gave several demonstrations at the county fair and put on the cottonseed-treatment demonstration at Clemson in July during a 4-H camp. For 2 years this team has demonstrated cottonseed treatment at the State fair at Columbia. On these occasions interested farmers have asked many questions relating to the economic value of this demonstration, and these youngsters have come through in fine shape with desirable and fundamental information and instruction. Two outstanding teams competed at the State fair last month. The Lancaster team comprised of Charles Taylor and Sam Knight, however, was bested by the Orangeburg team.

The use of the demonstration team is a very fine teaching method. The team necessarily has to learn its subject to do the job well, and the action appeals to the general public who likes to see the practical application of technical material. Results are obtained only by presenting practical and usable materials, practices and principles that can be applied at a reasonable cost. These demonstrations have proved that cottonseed and small-grain treatments measure up in these respects.

The extension service has been pleased with the educational work of these cottonseed- and small-grain-treatment demonstration teams. This type of work has many educational possibilities and should be encouraged as a part of the 4-H program in the various fields of activity. This work has promise and should grow rapidly.

--Dan Lewis, South Carolina State
Boys' Club Agent. November 10,
1938.

APPOINTMENTS

S. B. Fenne has been appointed extension pathologist and entomologist with the Virginia Extension Service, effective January 1, 1939. The position he vacated as extension pathologist in Georgia has been filled by the appointment of Huey I. Borders, who recently has been engaged in graduate work in plant pathology, University Farm, St. Paul, Minn. Mr. Border's official headquarters will be at the Coastal Plain Experiment Station, Tifton, Ga.

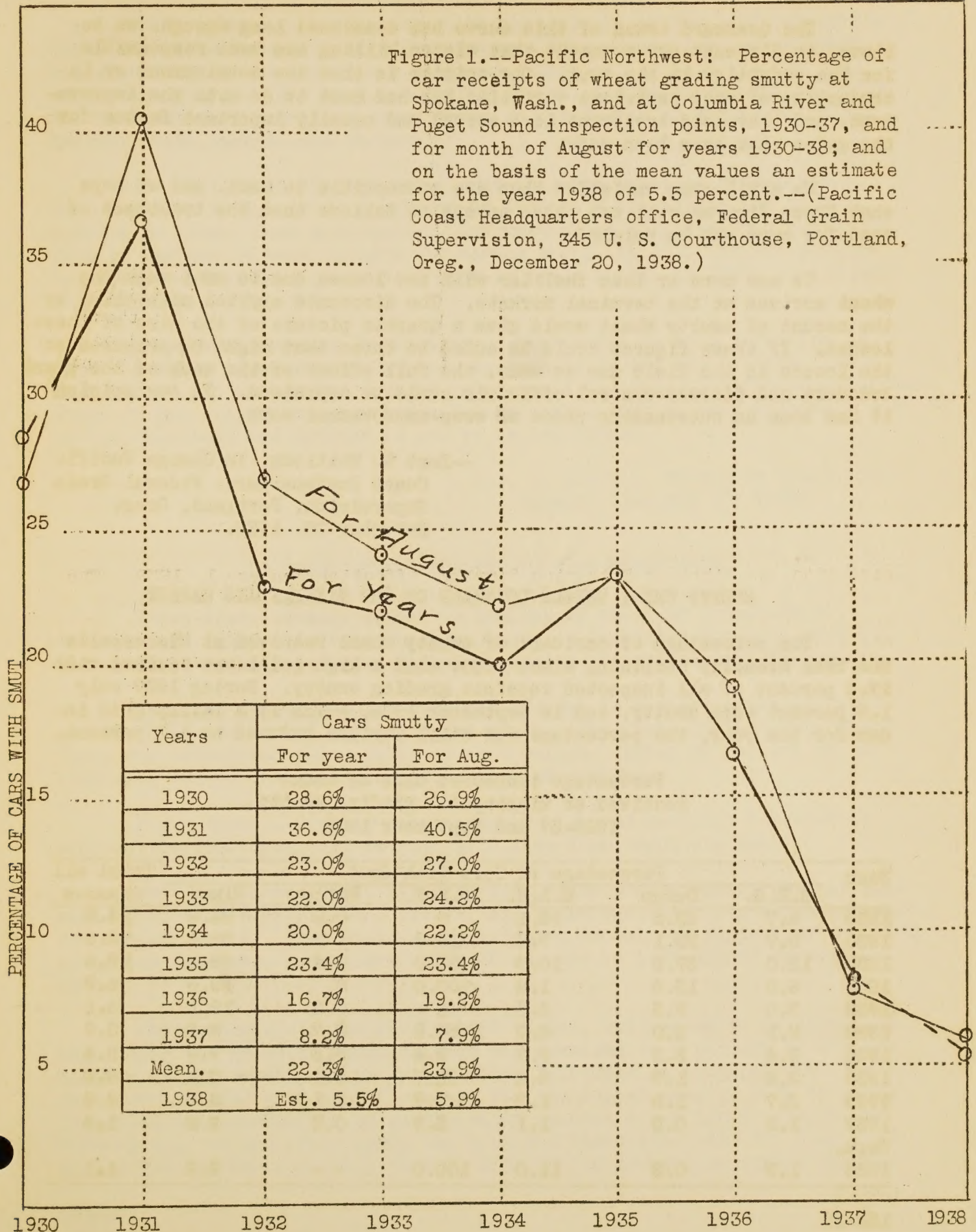
SMUTTY WHEAT RECEIPTS CONTINUE DECLINE

We really thought we had "touched bottom" when we reported last year that the percentage of smutty-wheat receipts at Columbia River, Puget Sound, and Spokane markets had dropped to about 8 percent from a high point of 36.6 percent in 1931. The 1938 figures indicate, however, that another new low mark will be established.

The August carlot inspections in Oregon and Washington show that the percentage of the 1938 wheat crop that grades smutty will be down to a point somewhere between 5 and 6 percent.

The accompanying chart prepared by E. N. Bates from figures compiled by R. L. Baldwin shows the smut trend since 1930. (Figure 1.)

Figure 1.--Pacific Northwest: Percentage of car receipts of wheat grading smutty at Spokane, Wash., and at Columbia River and Puget Sound inspection points, 1930-37, and for month of August for years 1930-38; and on the basis of the mean values an estimate for the year 1938 of 5.5 percent.--(Pacific Coast Headquarters office, Federal Grain Supervision, 345 U. S. Courthouse, Portland, Oreg., December 20, 1938.)



The downward trend of this curve has continued long enough, we believe, to discount any argument that winter killing has been responsible for the reduction in the smut. Our opinion is that the development or introduction of smut-resistant varieties has had most to do with the improvement, and that seed treatment is a second and equally important factor for the gains that have been made.

We still grow varieties that are susceptible to smut, and we hope that these figures will not cause anyone to believe that the treatment of seed for smut may be relaxed.

We are more or less familiar with the losses due to smut when the wheat arrives at the terminal markets. The discounts applied multiplied by the amount of smutty wheat would give a graphic picture of the size of these losses. If these figures could be added to those that might be prepared on the losses in the field due to smut, the full effect of the work of the plant breeders and disease-control officials could be appraised. In our opinion it has been an outstanding piece of crop-improvement work.

--Bert W. Whitlock, In Charge Pacific
Coast Headquarters, Federal Grain
Supervision, Portland, Oreg.
December 28, 1938.

SMUTTY WHEAT TRENDS DOWNWARD ON THE MINNEAPOLIS MARKET

The percentage of carloads of smutty wheat received at Minneapolis has been steadily declining since 1930, when a high point was reached with 17.8 percent of all inspected receipts grading smutty. During 1937 only 1.6 percent were smutty, and in September 1938, which is a fairly good index for the year, the percentage was still further reduced to 1.1 percent.

Percentage inspected cars of wheat
received at Minneapolis grading smutty,
1928-37 and September 1938

Year	Percentage of Cars With Smut						Total all classes
	H.R.S.	Durum	H.R.W.	S.R.W.	White	Mixed	
1928	9.7	33.5	14.1	0	0.9	24.9	14.9
1929	8.7	29.1	7.8	12.5	1.3	25.4	12.6
1930	12.0	37.9	10.9	50.0	1.4	38.1	17.8
1931	6.5	13.6	1.8	100.0	0	19.6	6.7
1932	3.6	9.3	5.8	0	0.8	18.1	5.1
1933	2.1	3.0	4.7	54.8	2.7	9.4	2.9
1934	2.4	2.2	5.7	9.4	3.3	7.2	3.4
1935	2.2	1.7	6.2	33.7	6.1	3.1	2.9
1936	3.7	1.2	1.7	7.7	2.1	3.8	2.8
1937	1.5	0.2	1.1	5.5	0.2	2.2	1.6
Sept. 1938	1.3	0.2	11.0	100.0	- -	2.2	1.1

Most of the wheat received at Minneapolis is of the hard red spring class with some durum and hard red winter. Only a very few cars of soft red winter and white wheats are received, these coming from outside the spring-wheat area. The hard red spring, durum, and mixed classes therefore for the most part represent wheat grown in the States of Minnesota, North Dakota, South Dakota, and Montana.

The decline in the amount of smut in durum wheat is remarkable, dropping from a high of 37.9 percent in 1930 to a negligible low of 0.2 percent in 1938. Less spectacular, but nonetheless positive, are the drops from 12 percent of smut in hard red spring wheat, in 1930, to 1.3 percent in 1938; and from 38.1 percent of smut in mixed wheat, in 1930, to 2.2 percent in 1938. (Fig. 2.)

Undoubtedly several factors have contributed to this reduction in smut. A study of weather relations, especially during the critical 1930-1931 period and during the drought years would undoubtedly throw considerable light on the situation, also intensive extension work on seed treatment with better materials and methods is not to be overlooked.

--R. J. Haskell, Extension plant pathologist, January 10, 1939.

DISEASES AFFECT QUALITY OF 1938 WHEAT CROP

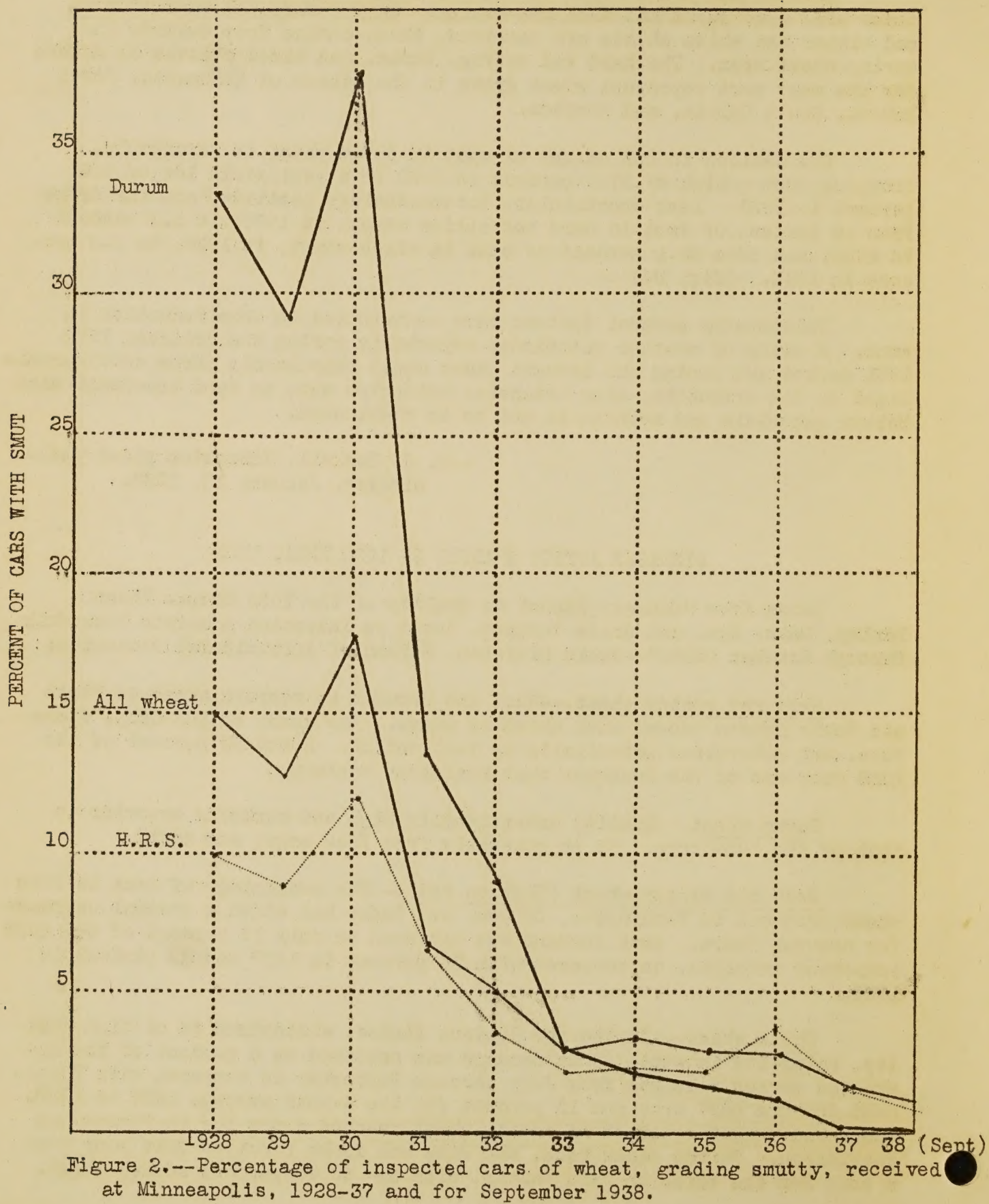
Notes from "Summary Report on Quality of the 1938 Crops--Wheat, Barley, Oats, Rye, and Grain Sorghum, Based on Inspected Receipts From July Through October 1938."--Grain Division, Bureau of Agricultural Economics:

Hard red spring wheat.--Rust and drought in western areas of North and South Dakota caused much shrunken wheat. The grade of the crop, therefore, was determined principally by test weight. About 50 percent of the 1938 crop was of the Thatcher rust-resistant variety.

Durum wheat.--Quality exceptionally high and markedly superior to that of the 1937 crop. It is generally free from ergot and smut.

Soft red winter wheat (Western red).--The percentage of smut in this wheat produced in Washington, Oregon, and Idaho has shown a gradual decrease for several years. Smut dockage was assessed on only 19 percent of the 1938 inspected receipts, as compared with 28 percent in 1937 and 39 percent in 1936.

White wheat.--In the far Western States, whitewheat is of high quality, being low in smut. Smut dockage was assessed on 8 percent of the inspected market receipts from July through September as compared with 7 percent for the 1937 crop and 15 percent for the 4-year average 1934 to 1937. Inspected market receipts of smutty wheat reached a new low in Oregon and Washington. On the other hand, the Utah and Idaho receipts this year took a turn for the worse on this factor, with 35- to 40-percent smutty wheat.



Barley (Class I).---Five percent graded "blighted" as compared with 9 percent in 1937, and 6 percent for the 4-year average.

Western barley (Class II).---The 1938 crop is practically free from smut.

An extension project in plant pathology was set up by the Arizona Extension Service, September 15, 1938, and Manfred Gottlieb has been appointed to the position of Extension Plant Pathologist. To facilitate travel, he is "headquartered" at 1201 West Madison Street, Phoenix. He is guided in subject matter by the Department of Plant Pathology and in methods by the extension service, both at Tucson.

SEED MACHINE-CLEANED AND TREATED BY 35 PORTABLES
OPERATED IN INDIANA, 1938

County	Wheat cleaned	Wheat treated	Oats		Soy- beans	Clover and misc. seeds	Total bushels	
	Bushels	Bushels	Cleaned	Treated	Bushels	Bushels	Cleaned	Treated
Knox(2units)	32,608	2,673					32,608	2,673
Posey	26,725	11,470					26,725	11,470
Johnson	22,660	16,140	200	200			22,860	16,340
Rush	22,090	7,072					22,090	7,072
Sullivan	16,389	820					16,389	820
Gibson	16,011	2,566					16,011	2,566
Henry	15,132	6,883	1,792	1,151			16,924	8,034
Decatur	13,945	9,215	24	24			13,969	9,239
Morgan	12,736	1,386					12,736	1,386
Delaware	12,422	4,984	5,786	5,786	2,466		20,674	10,770
Daviess	12,315	924					12,315	924
Pike	12,000	2,000	300	300			12,300	2,300
Gibson (private)	1,200		275	275			1,475	275
Hancock	10,815	5,486					10,815	5,486
Vanderburgh	10,630	2,797					10,630	2,797
Vigo	10,000	6,000					10,000	6,000
De Kalb	9,495		1,312	993	570		11,377	993
Spencer	8,951	2,277					8,951	2,277
Jackson	8,209	5,604	627	61	45	1,101	9,982	5,665
Dubois	8,127	2,710					8,127	2,710
Clark	7,986	3,900	365	365		481	8,832	4,265
Howard	7,321	6,336	4,180	4,180			11,501	10,516
Wells	7,050	3,171	4,168	2,910	1,860	218	13,296	6,081
Ripley	6,874	3,773				768	7,642	3,773
Shelby	6,860	1,863					6,860	1,863
Greene	6,660	245	500	500	400	985	8,545	745
Orange	6,650	4,800					6,650	4,800
Warrick	6,631	2,896					6,631	2,896
Boone	5,599	2,640			182	276	6,057	2,640
Hendricks	5,340	3,400					5,340	3,400
Jasper	5,016	4,366	2,855	2,855	2,365	275	10,511	7,221
Scott	4,548	2,415	425	425		542	5,515	2,840
State farms	4,215	3,860					4,215	3,860
Fountain	4,000	2,000			111	8	4,110	2,000
Total	367,210	136,672	22,809	20,025	7,999	4,654	402,672	156,697

	Cleaned	Treated
1/ 1937, 22 machines, total bushels	305,887	79,979

--C. E. Skiver, extension specialist in
soils and crops. Indiana Extension
Service.